



FINAL

# Dollar Creek Shared-Use Trail Project

## Land Capability and Land Coverage Report

Placer County, California

Date: January 2012

Project No 33369001

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## Acronyms

CTC	California Tahoe Conservancy
CWA	Clean Water Act
EIP	Environmental Improvement Project
EPA	Environmental Protection Agency
LRWQCB	Lahontan Regional Water Quality Control Board
LTBMU	Lake Tahoe Basin Management Unit
NRCS	Natural Resource Conservation Service
SEZ	Stream Environment Zone
TRPA	Tahoe Regional Planning Agency
USDA	United States Department of Agriculture
USFS	United States Forest Service
USGS	United States Geologic Survey

## **Introduction**

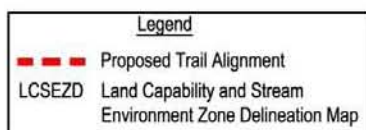
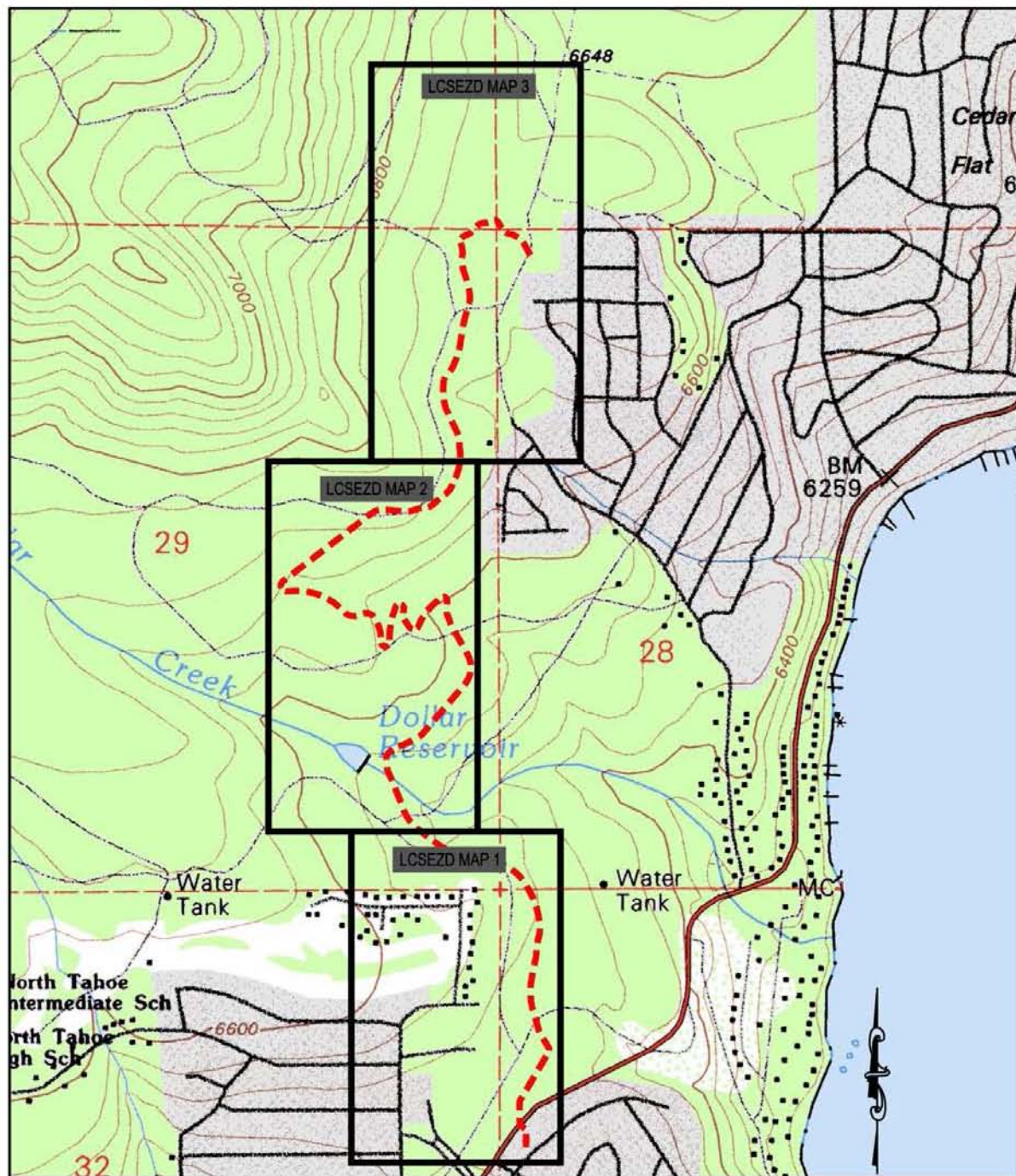
This report provides regulatory information, methods, and results for a routine level verification and delineation of Land Capability Districts, Stream Environment Zones and Land Coverage for the Dollar Creek Shared-Use Trail Project (Project). The purpose of the verification and delineation is to assess the limits of regional regulatory requirements for land coverage and resource protection within the Project area. This Land Capability District, Stream Environment Zone and Land Coverage Verification and Delineation Report describe the resources subject to regulation by the Tahoe Regional Planning Agency and the Lahontan Regional Water Quality Control Board (LRWQCB).

## **Project Area Location**

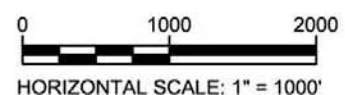
The proposed Project is located in eastern Placer County. The project area extends from the intersection of State Route 28 (SR 28) and Dollar Drive, which represents the southern boundary, to Fulton Crescent Drive, which represents the northeastern boundary. The Project is bounded to the west by the western portion of California Tahoe Conservancy parcel 092-010-035 and to the east by SR 28 and numerous private parcels. The Project Area is approximately 258.66 acres (11,267,603 sq. ft.) in size. Figure 1 depicts a overview of the proposed trail alignment on a U.S. Geologic Survey 7.5 minute topographic map.



**Figure 1: Dollar Creek Shared-Use Trail (Proposed Trail Alignment)**



**Figure 1**  
 Overview Map





## **Project Description**

The Project establishes a separated shared-use trail, extending the backbone of the existing north shore bicycle trail network, linking residential uses to jobs, schools, shopping, and recreation and community areas. The approximately 2.5 mile long trail will extend the existing Tahoe City to Dollar Point trail, which ends near the intersection of Dollar Drive and SR 28, to the end of Fulton Crescent Road, through public lands commonly known as the Dollar and Firestone properties. The Project will enhance recreational and transportation opportunities by extending the existing paved trail network in the Tahoe City area, including TCPUD's ten mile Class 1 trail from Tahoe City to Sugar Pine Point State Park and the trail along the Truckee River. The project may also include a trailhead parking facility near Dollar Drive and SR 28 for trail users.

## **Purpose for the Report**

One of the initial project tasks is the verification and delineation of Land Capability Districts, Stream Environment Zones and Existing Land Coverage within the designated boundaries of the project area. The field work was performed over ten (10) parcels, thereby including a much larger corridor (i.e. width) than the proposed linear positions of the two (2) shared-use trail alignment alternatives. This approach was chosen to allow for adjustments to the proposed alignment as it progresses through the design and environmental review process.

Cardno ENTRIX reviewed the existing TRPA Land Capability District maps and Sinclair Stream Environment Zone maps for the project area. The Bailey Land Capability District verification and delineation process was performed to refine these Order 3 maps (i.e. Scale 1:24,000 to 1:250,000) for application at the appropriate project scale (e.g. Scale 1:20 to 1:100).

Cardno ENTRIX prepared this Report to satisfy the Land Capability and Land Coverage requirements for the TRPA permitting process. The Land Coverage determinations and Land Capability District boundaries represented herein will be advanced to the TRPA to be designated as the "officially verified" Land Capability District boundaries and Land Coverage determinations for the project area. This information will then be incorporated into the Project Base mapping for use in the environmental documentation and eventual permitting process.

## **Environmental Setting**

The following paragraphs briefly describe the topography, vegetation, hydrology, soils, geomorphology and geology associated with the Project area and the adjacent vicinity.

### **Topography**

The project area is located on the Kings Beach, California 7.5 minute U.S. Geological Survey (USGS) quadrangle map. The topography of the project site slopes from the northwest to the east and southeast. The project area is located between the elevations of 6,500 and 7,000 feet above mean sea level (msl). Slopes range from 2 to 30 percent.

### **Upland Forest Vegetation Communities**

The project area is mostly comprised of a mixed conifer forest characterized by an overstory composed mainly of White fir (*Abies concolor*), Jefferey Pine (*Pinus jeffreyi*), Sugar Pine (*Pinus lambertiana*) and Incense Cedar (*Calocedrus decurrens*). The understory includes western serviceberry (*Amelanchier utahensis*), greenleaf manzanita (*Artocostaphylos patula*), whitethorn ceonothus (*Ceanothus cordulatos*),

prostrate ceonothus (*Ceanothus prostratus*), huckleberry oak (*Quercus vacciniifolia*) and creeping snowberry (*Symphoricarpos mollis*).

## **Stream Environment Zone Vegetation Communities**

The Dollar Creek montane riparian plant community is comprised of a interspersed complex of three (3) primary regulatory floristic communities. The most prominent vegetation community is dominated by an overstory of mostly mountain alder (*Alnus incana* ssp. *tenuifolia*) with few black cottonwoods (*Populus trichocarpa*) interspersed. Western thimbleberry (*Rubus parviflorus*) and a small amount of Pacific dogwood (*Cornus nuttallii*) comprise the shrub understory. Willow (*Salix* spp) mixed with minor inclusions of montane emergent wetland that include beaked sedge (*Carex utriculata*), inflated sedge (*Carex vesicaria*), Nebraska sedge (*Carex nebrascensis*) and other sedge species (*Carex* species), rushes (*Juncus* species), and tufted hairgrass (*Deschampsia cespitosa*) are also present (Sawyer, Keeler-Wolf 1995).

TRPA Chapter 37.3.A establishes the definition for primary riparian floristic communities based on the document: "Vegetation of the Lake Tahoe Region, A Guide for Planning" (1971). The Stream Environment Zones within the project area would be most appropriately described as belonging to a complex of three (3) primary regulatory floristic communities: the Riparian Shrub Plant Community Type 7b (Alder Thicket); the Riparian Woodland Plant Community Type 9a (Low Elevation Broadleaf) and small intermittent inclusions of the Herbaceous Plant Community Type 2d (Wet Mesic Meadow). A Stream Environment Zone shall be determined to be present if any one of the Stream Environment Zone primary indicators is present. The Stream Environment Zone primary plant communities were identified in accordance with the definitions and procedures contained in the 1971 report entitled "Vegetation of the Lake Tahoe Region, A Guide for Planning."

The Stream Environment Zone Primary Indicators in the Project Area are:

1. Evidence of surface water flow, including perennial, ephemeral and intermittent streams;
2. Primary riparian vegetation;
3. Near surface groundwater;
4. Lakes or ponds

## **Stream Environment Zone Setback Recommendations**

Dollar Creek is a confined perennial system and the setback recommended is based on the corresponding slope condition being assessed as good. When the slope condition is determined to be good, the prescribed setback is thirty five (35) feet from the edge of the Stream Environment Zone.

An unnamed creek was identified in the northern part of the project area (see Figure4). This Stream Environment Zone is an intermittent system and the following setback is recommended based on the corresponding slope condition being assessed as good. When the slope condition is determined to be good, the prescribed setback is fifteen (15) feet from the edge of the Stream Environment Zone.

## **Surface Hydrology**

The Dollar Creek watershed is the perennial stream that drains a majority of the project area. The creek originates approximately one mile east of Martis Peak and flows southeast through the southern portion of the project area. Dollar Creek ultimately crosses under State Route 28 and discharges into Lake Tahoe. Other than Dollar Creek, no other major drainages occur in the Project area.

## **Soils**

Soils in the delineation study area were originally mapped by the U.S. Soil Conservation Service during their survey of soils in the Lake Tahoe Basin (Rogers 1974). The Natural Resource Conservation Service (Loftus 2007) has recently updated the mapping, including the soils in the Project area and surrounding vicinity. A total of four soil map units occur within the boundaries of the project area (Figures 2, 3 and 4). The narrative description of the physical characteristics of the soils that were sampled within the project area is summarized in Appendix A. However, the soils associated with the riparian woodlands and emergent wetlands present along Dollar creek and the unnamed intermittent drainage in the northern part of the project area were determined to be hydric.

Soils are a critical element in land use planning in the Tahoe Basin because the TRPA Land Capability Districts are based on soil map units. The NRCS 2007 Soil Survey update shows four (4) soil map units comprising the project area. The Tahoma and Jorge are the soil series that dominate these four maps units. These two soil series are, in general, very cobbly sandy loams that occur on gently sloping to steep slopes (2 to 30 percent). These soils are formed from residuum derived from the weathering of volcanic rock; more specifically latite and andesitic agglomerate (NRCS 2007).

Soils of the Tahoma series are generally 40 to 60 inches deep. The frost-free season in areas having this soil type is typically 30 to 50 days. Permeability is moderate, the available rooting depth is 60 inches and the available water holding capacity of the soil is 5 to 6.5 inches (NRCS 2007).

Soils of the Jorge series are underlain by volcanic rocks such as andesite, basalt and latite. Slopes range from 2 to 50 percent. Like the Tahoma soils, the frost-free season is 30 to 50 days. Permeability is moderate, the available rooting depth is 60 inches and the available water holding capacity of the soil is 3 to 5 inches (NRCS 2007).

## **Man Modified Ruderal Areas**

Ruderal areas (i.e. disturbed and compacted soils) are located throughout the Project area. Ruderal areas primarily occur on and immediately adjacent to unpaved right-of ways and repeatedly compacted trails.

## **Geomorphology**

The upland portion of the Dollar creek watershed soils were developed on mostly andesitic bedrock which predominantly underlies the northwestern flank of the Carson Range. The geomorphology is typical of andesitic terrain. Bedrock outcrops (i.e. disjointed core stone complexes) are exposed in some areas; other areas are mantled by moderately to extremely weathered bedrock and colluviums (i.e., sediments produced by slope processes including sheetwash, creep, and land sliding). Although the slopes are moderately steep, slope failures appear to be restricted to small debris slides and soil slumps. Review of aerial photos and field reconnaissance indicate that these gentle to moderately steep slopes are relatively stable (e.g., do not have significant field evidence of soil tension cracks and slope failures).

The lower portion of the watershed is dominated by two distinct mapped geologic units. The relatively flat topography is mapped as Tertiary volcanics with inclusions of Quaternary lake terrace deposits. The lacustrine sediments were deposited at a higher lake level (relative to the present conditions) and are generally found at elevations that are 30 to 50 feet above the current lake surface. These processes resulted in a broad geomorphic surface which generally extended from the edge of the current lake to the base or foot of the upland slopes.

## **Geology**

The Project area comprises an area on the northern margin of Lake Tahoe, a large natural lake located at the border between California and Nevada. The area is also at the margin of two major geologic regions, the Sierra Nevada, and Basin and Range Geomorphic Regions. The two regions have distinct geologic, geomorphic, hydrologic, and tectonic characteristics. The regional geologic setting of the Project area (Saucedo 2005) is characteristic of the Sierra Nevada region with steep topography developed on primarily granitic bedrock of the Sierra Batholith. The Batholith represents a series of large igneous intrusions emplaced during the Paleozoic Era (575 to 270 million years ago). The Sierra Nevada mountain region has been uplifted as a tectonic block. Portions of the Basin are mantled by glacial till (generally undifferentiated mixtures of gravel and boulders in a matrix of finer-grained sediments) deposited by a succession of glaciations during the Quaternary period (last 2 million years). The larger stream valleys are partially filled with glacial outwash sediments (silt, sand, and some gravel) and more recent lacustrine (i.e., lake environment) and alluvial (i.e., stream) deposits. Lake levels have fluctuated (lake level eustasis) within Lake Tahoe Basin in response to climatic changes and outlet restrictions from the lake into the Truckee River. Geologic evidence indicates that historically lake levels may have been significantly higher than present levels (Howle *et al.* 2005). Evidence of higher lake levels is reflected in the mapping of Lake Terrace deposits above the current water line on the southern margin of the lake (Saucedo 2005). Recent investigations near the southern margin suggest that a relatively high stand of the lake resulted in deposition of lake sediments within the Upper Truckee Marsh during the period 14,000 to 25,000 years ago (Delusina *et al.* 2006).

The tectonic conditions and geologic structure of the Lake Tahoe basin are characteristic of the Basin and Range region. The Lake Tahoe basin is a fault-bounded valley formed by the extensional tectonic regime which defines the Basin and Range (Schweickert *et al.* 2004). The valley is the western-most basin of this portion of the Basin and Range and is bounded by the Sierra Nevada to the west and the Carson Range to the east. More specifically, the basin is a half graben, formed between the West Tahoe Fault, located on the western margin of the lake, and the North Tahoe-Incline Village Faults at the north end of the lake.

## **Regulatory Background**

### **TAHOE REGIONAL PLANNING AGENCY LAND COVERAGE REGULATIONS**

#### **The Bailey Land Capability Scoring System**

Soil conservation is essential for the maintenance of healthy plant communities, the prevention of erosion, the protection of water quality, the maintenance of healthy stream systems and the protection of lake clarity. Two of the major elements that form the soil conservation strategy for Lake Tahoe are: 1) the restriction of impervious land coverage; and 2) the conserving of Stream Environment Zones. Impervious land coverage, such as asphalt, concrete and roofs and compacted soils prevent stormwater runoff from infiltrating into the soil. When surface runoff bypasses this natural process, it fails to be filtered by the soil and contribute to groundwater recharge. Excess runoff contributes to the accelerated incision of stream channels. It also erodes stream banks and unnecessarily damages vegetation. Stream bank channel erosion contributes to the degradation of water clarity and transparency. Stream Environment Zones are riparian forests, meadows, marshes and wetlands that serve to slow runoff by dispersing it over a large area, allowing water to slowly infiltrate, sediment to settle out and the vegetation and soil to adsorb nutrients.

## **Land Capability Districts**

Since the late 1970s, regulatory agencies in the Lake Tahoe Basin, primarily TRPA, have used the land capability classification system known as the “Bailey System” to help evaluate permit applications for new or redevelopment project (A Land Capability Classification of the Lake Tahoe Basin, California-Nevada: A Guide to Planning, Bailey 1974). The Bailey System was developed as a set of programmatic erosion control techniques designed to minimize the deleterious consequences to water quality that can result from the uncontrolled installation of impervious coverage.

Land capability is defined as “the level of use an area can tolerate without sustaining permanent environmental damage through erosion and other causes” (Bailey 1974). The U.S.D.A. Forest Service and TRPA developed the Bailey Land Capability System based on the USDA Soil Conservation Service Soil Survey maps for the Tahoe Region (Rogers 1974). Each soil map unit was assigned a Land Capability District Class ranging from 1 to 7, with Land Capability District Class 1 being interpreted as the most environmentally fragile and sensitive to development. The Land Capability District Class assigns a percentage of land coverage that could be potentially allowed on a parcel of land. Furthermore, wherever land was found to be influenced by a surface stream or high groundwater, it was assigned to Land Capability District 1b, also referred to as “Stream Environment Zone” or SEZ. The National Resource Conservation Service is the federal agency responsible for mapping the soil types in the Lake Tahoe basin. The NRCS continues to assist the TRPA with corroborating and the updating the original Bailey map classifications.

Land Capability Districts were derived by analyzing the land capability according to the frequency and magnitude of hazards that may be encountered if the land were developed. They were also developed by considering the type and intensity of land use suitable for each soil map unit. The integration of the Land Capability District map unit with basin wide land use suitability planning resulted in establishing limits on impervious coverage for each Land Capability District map unit.

Chapter 2 of the TRPA Code of Ordinances defines land coverage as a man-made structure, improvement or covering that prevents normal precipitation from directly reaching the surface of the land underlying the structure, improvement or covering. Examples include structure related roofs, decks, patios and driving surfaces paved with asphalt, concrete or stone. Such structures are defined as “hard coverage.” Compacted soils that mimic the non infiltrating qualities typical of impervious surfaces are defined as “soft coverage.” Soft coverage is compacted or highly disturbed soils that exist due to repeated vehicular traffic and / or heavy pedestrian use. The TRPA Code Chapter 2 definition continues on to state: “A structure or impervious surface shall not be considered land coverage if it permits 75 percent of precipitation to directly reach the soil surface; and it permits growth of native vegetation” (TRPA 1991).

The Land Capability verification and delineation process, as outlined in TRPA Code Chapters 20 and 37 have been used to determine how much potential coverage can be allowed on the ten parcels that comprise the North Tahoe Bike Trail project area.

Chapter 20 in the TRPA Code of Ordinances establishes the Land Coverage standards. This system assigns each Land Capability District a percent allowable coverage based on the Soil Hydrologic Soil Group (i.e. Soil depth and permeability) and slope steepness. Allowable land coverage can then be calculated based on the size of the parcel. Chapter 20 provides a table that presents the base percent coverage allowed for each Land Capability District.



## Dollar Creek Shared-Use Trail Project – Land Capability and Land Coverage Report

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Lands Located in Land Capability District	Allowable Base Coverage
1a, 1b, 1c	1%
2	1%
3	5%
4	20%
5	25%
6, 7	30%

If the project site were completely undeveloped, the verified Land Capability District would establish the allowable coverage for the Project area by soil map unit and parcel size. However, the project site is not totally undeveloped and the Land Coverage for the project area was never mapped and verified by TRPA. The project area currently has 81,696 square feet (sf) of existing “soft” coverage in the form of densely compacted trails and unimproved or abandoned right of ways. These areas were determined through air photo analysis to be presently existing (i.e. 2012) and prior to 1972. The existing land coverage information provides additional data that affects the calculation of total allowable coverage that can be used or transferred in the project area. If no existing land coverage was present within the project area then just summing up the allowable base coverage’s assigned by Land Capability District would determine the total. Therefore, the total allowable coverage for the project area will be determined by both the presence of verified existing land coverage and the base allowable coverage as determined by the verification and delineation of the Land Capability District.

The Bailey system prohibits new development on Land Capability Districts 1 through 3. It also restricts the amount of coverage (e.g. bike trail pavement) that can be placed on parcels designated as Land Capability Districts 4 through 7. The TRPA has built into its Code of Ordinances a program for land coverage transfer for parcels within Bailey Land Capability District Classes 1 through 3. This coverage transfer program encourages development to be moved away from the most sensitive areas and provides project proponents a practical mechanism to implement projects that are consistent with the appropriate development of their land.

## LAND COVERAGE

TRPA Code of Ordinances Chapter 2 defines Land Coverage as:

*A man-made structure, improvement or covering, either created before February 10, 1972 or created after February 10, 1972 pursuant to either TRPA Ordinance No. 4, as amended, or other TRPA approval, that prevents normal precipitation from directly reaching the surface of the land underlying the structure, improvement or covering. Such structures, improvements and coverings include but are not limited to roofs, decks, surfaces that are paved with asphalt, concrete or stone, roads, streets, sidewalks, driveways, parking lots, tennis courts, patios; and 2) lands so used before February 10, 1972, for such uses as for the parking of cars and heavy and repeated pedestrian traffic that the soil is compacted so as to prevent substantial infiltration. A structure, improvement or covering shall not be considered as land coverage if it permits at least 75 percent of normal precipitation directly to reach the ground and permits growth of vegetation on the approved species list. Common terms related to land coverage are:*

- 1. Hard Coverage – man-made structures as defined above.*
- 2. Soft Coverage – compacted areas without structures as defined above.*

There are two categories of land coverage: existing coverage and potential coverage. Existing land coverage refers to the impacted surface of a parcel that can be restored to its near-natural state and then transferred to another parcel. Existing soft land coverage can be transferred in most cases, except for transfers relating to commercial or tourist accommodation use. Potential land coverage refers to the unused allowable base land coverage on a parcel that can be transferred to another parcel. Any land that is undeveloped or developed to a lesser extent than allowed by the Bailey Land Capability District coefficient has potential land coverage that can be used, transferred or sold.

## **Land Capability Results and Conclusions**

### **Potential Allowable Land Coverage**

The proposed project site is located primarily in Land Capability District 6, which assigns a base allowable land coverage of 30 percent (TRPA Code of Ordinances 20.3.A).

Land Capability District 6 dominates the majority of the project area. There are also portions of the project area mapped as Land Capability District 4, which assigns base allowable land coverage of 20 percent and Stream Environment Zone which is designated as Land Capability District 1b, which assigns a base allowable land coverage of 1 percent (TRPA Code of Ordinances 20.3.A). There is a total of 3,229,159 square feet (74.13 acres) of potential land coverage calculated to the parcels that comprise the Project Area.

TRPA Code of Ordinances Section 20.5.C provides that land coverage on a developed site may be relocated to other parts of the project area. The areas where the existing land coverage is relocated from must be restored and rehabilitated in accordance with TRPA Code Section 20.5.C (2) and the provisions provided in the Revegetation Chapter (TRPA Code Chapter 77).

### **Existing Land Coverage**

Tables 1 through 10 (Appendix B) have been assembled to show the type and amount of soft land coverage that were mapped as currently existing in the project area. As shown in the Tables, the project area contains a large amount of existing soft land coverage that is represented in this report as being present prior to 1972. The Project may need to restore some disturbed and compacted areas in order to bank the restored soft land coverage for relocation within the project area boundaries. The project area currently has 81,696 square feet (1.87 acres) of soft land coverage that is being represented as present prior to 1972.

### **Field Investigation Methods**

Cardno ENTRIX assigned Mr. Timothy Hagan, a Senior Soil and Wetland Scientist, to perform the field work and write the report. The field work required the knowledge and experience to verify and demarcate the soil unit polygons and Stream Environment Zones located within the project area. The Land Coverage deemed eligible for field mapping (i.e. trails and unimproved right-of-ways) was pre-identified by air photo analysis as being present in the project area prior to 1972. The compacted trails and unimproved road surfaces identified as being present prior to 1972 were then traced, plotted and mapped onto a project area base map. The existing land coverage verification process relied on the use of a hand held static penetrometer in order to quantify the level of soil compaction present. This field apparatus measures the soil's strength or resistance to penetration. Soil strength beyond a specific threshold (i.e. approximately 3,500 kPa or 510 psi) generally prevents plant establishment and significantly diminishes the soils ability to infiltrate and transmit water (i.e. hydraulic conductivity). The dimensions of the compacted trails were measured at approximately 100 foot intervals when mapped in the field. The widths were then averaged

by the length of trail to which the average applied. The soft land coverage areas that were measured were then summarized and presented in the Land Coverage Tables located in Appendix B. Cardno ENTRIX staff performed the Land Capability District, Stream Environment Zone and Existing Land Coverage verification and delineation protocol on October 11<sup>th</sup>, 14<sup>th</sup>, 18<sup>th</sup>, 19<sup>th</sup>, 24<sup>th</sup>, 25<sup>th</sup> and 26<sup>th</sup> 2011.

## **Project Research**

Prior to the field visit, a 300' scale (1" = 300') aerial photograph of the site was obtained and compared with the USGS 7.5-minute topographic quadrangle and a 100' scale project area topographic map to identify the drainage features within and adjacent to the project area. These areas can be recognized by the visual indications from vegetation types, topography and geomorphic drainage patterns. The 2007 NRCS soil survey map was also reviewed to identify the soil map units and soil families that comprise the Project area.

The following information was reviewed for this delineation:

- Kings Beach and Tahoe City USGS 7.5 minute topographic map;
- Pre 1989 and pre 1972 aerial photographs of the project area;
- The updated Soil Survey of the Tahoe Basin (NRCS 2006);
- TRPA Bailey Land Capability District Overlay Maps;
- TRPA Sinclair Stream Environment Zone Overlay Maps.

The Land Capability District, Stream Environment Zone and Existing Land Coverage verification and delineation was conducted in accordance with the methods described in Chapter 20 and Chapter 37 of the TRPA Code of Ordinances. Vegetation, soil and hydrology information was collected, logged and recorded in a project specific field book. The acreage of each map unit and the soft coverage features were plotted and transferred onto a project map. All potential land coverage and existing land coverage was calculated in a CAD generated base map. The information was then prepared to create the final Land Capability District and Land Coverage maps.

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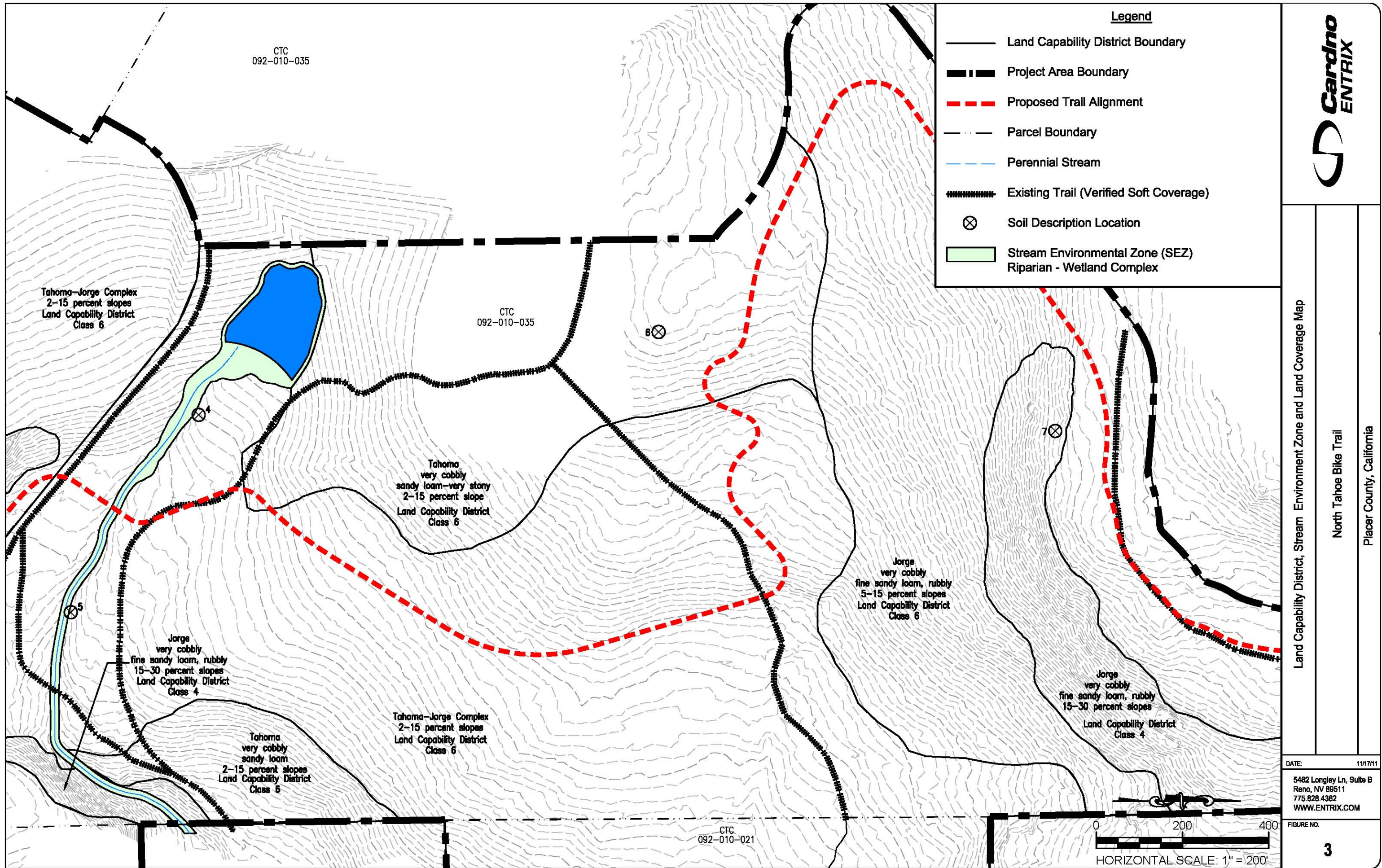
Senior Soil and Wetland Scientist..... Tim Hagan





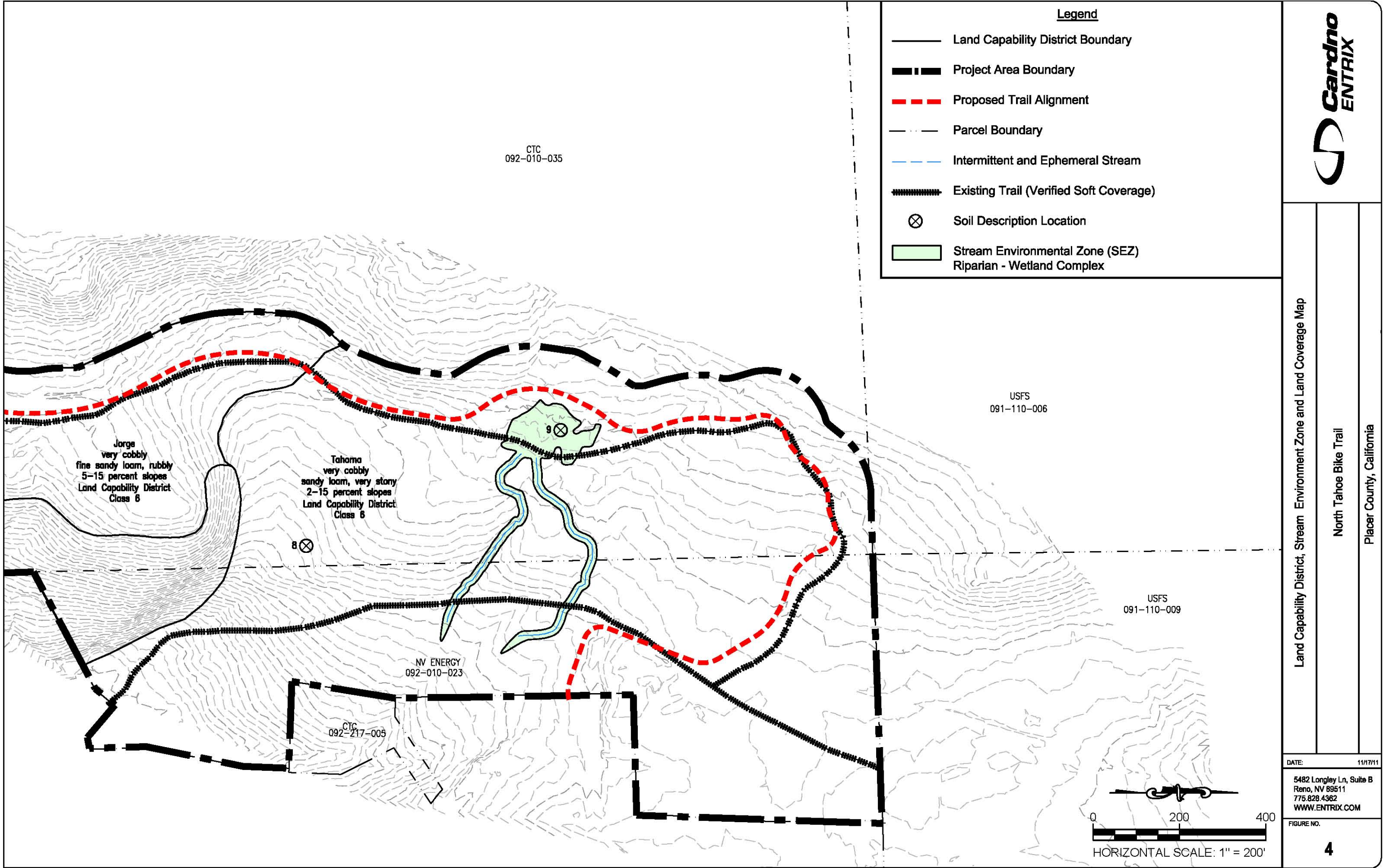
















Appendix A

# Soil Profile Descriptions

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## **Appendix A: Soil Profile Descriptions**

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PLEASE NOTE: In the following Appendix, one may notice that the same APN may be listed for more than one soil profile description. The soil profile descriptions were spatially distributed to capture and characterize the entire project area. In some cases, multiple soil profile descriptions were generated on the same parcel due to its comparatively larger size. Please refer to the marked soil profile locations identified on the adjoining project area maps for further clarification as to their specific location.

**North Tahoe Public Utility District Parcel**  
**Placer County APN 093-010-039**

## **ENVIRONMENTAL SETTING**

This parcel is shown as Land Capability District Class 6 on the TRPA Land Capability Overlay Maps. The Natural Resource Conservation Service Soil Survey update (2007) for the Lake Tahoe Basin places this parcel within the Tahoma very cobbly sandy loam, very stony (2 to 15 percent slopes) soil map unit. The Tahoma very cobbly sandy loam, very stony (2 to 15 percent slopes) soil map unit is consistent with the D-1 (Toe slope lands) Bailey geomorphic unit classification. The natural slope is 2 to 15 percent. The soils are deep and moderately well drained. The natural vegetation is White fir and Jeffrey Pine, with an understory of prostrate ceonothus, greenleaf manzanita and bitterbrush.

## **CONCLUSION**

Based on the soil description for this specific location, the soil is consistent with the central concept assigned to the Tahoma soil series listed in the Soil Survey update for the Lake Tahoe Basin (2007). The Tahoma soil series translates to Land Capability District Class 6, under the Bailey Land Capability Classification system (Bailey, 1974) and Chapter 20 of the TRPA Code of Ordinances.

### **Soil Profile Description # 1:**

**Soil Map Unit:** Tahoma very cobbly sandy loam, very stony (2 to 15 percent slopes)

**Soil Classification:** Loamy-skeletal, isotic, frigid Andic Haploxeralf

**Verified Soil Series:** Tahoma

**Drainage:** Moderately Well Drained

**Hydrologic Soil Group:** B

**Oi** 2 to 0 inches; Jeffrey pine and White fir needles.

**A1** 0 to 9 inches; dark yellowish brown (10YR 3/4) very cobbly sandy loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots, few medium coarse roots; many very fine and fine interstitial pores; 15 percent gravel, 20 percent cobbles; clear smooth boundary.

**BA** 9 to 17 inches; brown (10YR 4/4), very cobbly sandy loam, dark brown (10YR 4/3) moist; moderate, fine granular trending to weak, fine subangular blocky structure; slightly hard, very friable, nonsticky and slightly plastic;; many very fine and fine, few medium and coarse roots, many very fine and fine interstitial pores; 15 percent gravel, 20 percent cobbles; gradual wavy boundary.

**Bt1** 17 to 28 inches; yellowish brown (7.5 YR 4/4) gravelly sandy clay loam, dark brown (7.5 YR 3/4) moist; moderate, medium subangular blocky structure; hard, friable, slightly sticky and plastic; common fine and few medium and coarse roots; many very fine and fine interstitial pores; 15 percent gravel, 20 percent cobbles; clear wavy boundary.

**Bt2** 28 to 39 inches; strong brown (7.5 YR 5/6) coarse sandy clay loam, dark brown (7.5 YR 4/4) moist; moderate, medium subangular blocky; hard, friable, slightly sticky and plastic; few fine, medium and coarse roots; many very fine and fine interstitial pores; 20 percent gravel, 20 percent cobbles; clear wavy boundary.

**Cr** 39+ inches plus: fractured vesicular andesitic agglomerate.



**North Tahoe Public Utility District Parcel**  
**Placer County APN 093-010-039**

## **ENVIRONMENTAL SETTING**

This parcel is shown as Land Capability District Classes 4 and 6 on the TRPA Land Capability District Overlay Maps. The Natural Resource Conservation Service Soil Survey update (2007) for the Lake Tahoe Basin places this parcel within the Tahoma - Jorge Complex soil map unit (5 to 15 percent slopes). The Tahoma - Jorge Complex soil map unit is consistent with the D-1 (Toe slope lands) Bailey geomorphic unit classification. The natural slope is 5 to 15 percent. The natural vegetation is White fir and Jeffrey Pine, with an understory of prostrate ceonothus, greenleaf manzanita and bitterbrush.

## **CONCLUSION**

Based on the soil description for this specific location, a soil series consistent with the designated Tahoma - Jorge Complex soil map unit was verified on this parcel. This soil is consistent with the central concept assigned to the Jorge soil series listed in the Soil Survey for the Lake Tahoe Basin (2007). The Jorge soil series is assigned to Land Capability District Class 6, under the Bailey Land Capability Classification system (Bailey, 1974) and Chapter 20 of the TRPA Code of Ordinances.

### **Soil Profile Description # 2:**

**Soil Map Unit:** Tahoma - Jorge Complex (5 to 15 percent slopes)

**Soil Classification:** Loamy-skeletal, isotic, frigid Andic Haploxeralf

**Verified Soil Series:** Jorge

**Drainage:** Moderately Well Drained

**Hydrologic Soil Group:** B

**Oi** 1 to 0 inches; needles and duff.

**A1** 0 to 7 inches; yellowish brown (10YR 5/4) very cobbly, sandy loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, loose, nonsticky and nonplastic; many very fine and fine roots, few coarse roots; many very fine and fine interstitial pores; 15 percent gravel, 20 percent cobbles; clear smooth boundary.

**A2** 7 to 14 inches; yellowish brown (10YR 5/4) very cobbly, sandy loam, dark brown (7.5 YR 4/4) moist; moderate, medium subangular structure; hard, friable, slightly sticky and slightly plastic; common fine, medium and coarse roots; many very fine and fine tubular pores; common clay films on ped faces and lining pores 15 percent gravel, 20 percent cobbles; clear wavy boundary.

**Bt1** 14 to 28 inches; brown (7.5YR 5/4) very cobbly sandy clay loam, dark brown (7.5 YR 4/4) moist; moderate, medium subangular structure; hard, friable, slightly sticky and plastic; common fine, medium and coarse roots; many very fine and fine tubular pores; 15 percent gravel, 20 percent cobbles; clear wavy boundary.

**Bt2** 28 to 38 inches; brown (7.5YR 5/4) very cobbly sandy clay loam, dark brown (7.5 YR 4/4) moist; moderate, medium subangular structure; hard, friable, slightly sticky and plastic; common fine, medium and coarse roots; many very fine and fine tubular pores; 15 percent gravel, 20 percent cobbles; clear wavy boundary.

**C** 38 + inches; yellowish brown (10 YR 5/6) very cobbly sandy clay loam, dark yellowish brown (10 YR 4/6) moist; moderate, medium subangular structure; 15 percent gravel, 20 percent cobbles.

**California Tahoe Conservancy Parcel**  
**Placer County APN 092-240-021**

## **ENVIRONMENTAL SETTING**

The parcel is shown as Land Capability District Classes 4 and 6 on the TRPA Land Capability Overlay Maps. The Soil Conservation Service Soil Survey for the Lake Tahoe Basin places this parcel within the Jorge, very cobbly fine sandy loam, rubbly (15 to 30 percent slopes) and Tahoma - Jorge Complex (5 to 15 percent slopes) soil map units. Both map units are consistent with the D-1 (Toe Slope Lands, low hazard lands) geomorphic unit classification. This parcel is on an east and southeast facing slope. The natural slopes associated with this portion of the project area are between 5 to 30 percent.

## **CONCLUSION**

Based on the soil description for this specific location, the soils are interpreted to be most analogous to the Jorge soil series. Based on slope and the cited characteristics, the soil on this portion of the parcel would be assigned to Land Capability District Class 4, in accordance with the Land Capability Classification of the Lake Tahoe Basin (Bailey, 1974) and Chapter 20 of the TRPA Code of Ordinances.

### **Soil Profile Description # 3:**

**Soil Map Unit:** Jorge, very cobbly fine sandy loam, rubbly (15 to 30 percent slopes)

**Soil Classification:** Loamy-skeletal, isotic, frigid Andic Haploxeralf

**Verified Soil Series:** Jorge

**Drainage:** Moderately Well Drained

**Hydrologic Soil Group:** B

**Oi** 1 to 0 inches; conifer needles and organic duff.

**A1** 0 to 9 inches; yellowish brown (10YR 5/4) very cobbly sandy loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, loose, nonsticky and nonplastic; many very fine and fine roots, few coarse roots; many very fine and fine interstitial pores; 15 percent gravel, 25 percent cobbles; clear smooth boundary.

**A2** 9 to 16 inches; yellowish brown (10YR 5/4) gravelly sandy loam, dark brown (7.5 YR 4/4) moist; moderate, medium subangular structure; hard, friable, slightly sticky and slightly plastic; common fine, medium and coarse roots; many very fine and fine tubular pores; common clay films on ped faces and lining pores 15 percent gravel, 25 percent cobbles; clear wavy boundary.

**Bt1** 16 to 25 inches; brown (7.5YR 5/4) gravelly sandy clay loam, dark brown (7.5 YR 4/4) moist; moderate, medium subangular structure; hard, friable, slightly sticky and plastic; common fine, medium and coarse roots; many very fine and fine tubular pores; 20 percent gravel, 25 percent cobbles; clear wavy boundary.

**Bt2** 25 to 35 inches; brown (7.5YR 5/4) gravelly sandy clay loam, dark brown (7.5 YR 4/4) moist; moderate, medium subangular structure; hard, friable, slightly sticky and plastic; common fine, medium and coarse roots; many very fine and fine tubular pores; 20 percent gravel, 25 percent cobbles; clear wavy boundary.

**C** 35 + inches; yellowish brown (10 YR 5/6) coarse sandy clay loam, dark yellowish brown (10 YR 4/6) moist; moderate, medium subangular structure; common clay films on ped faces and lining pores 20 percent gravel, 25 percent cobbles.

**California Tahoe Conservancy Parcel**  
**Placer County APN 092-010-035**

## **ENVIRONMENTAL SETTING**

The parcel is shown as Land Capability District Classes 1b (SEZ), 4 and 6 on the TRPA Land Capability and Stream Environment Zone Overlay Maps. The 2007 NRCS Soil Survey update for the Lake Tahoe Basin places this parcel within the Tahoma - Jorge complex (2 to 15 percent slopes), Tahoma very cobbly sandy loam (2 to 15 percent slopes), Jorge, very cobbly fine sandy loam, rubbly (15 to 30 percent slopes) and Jorge, very cobbly fine sandy loam, rubbly (5 to 15 percent slopes) soil map units. These four soil map units are consistent with the D-1 (Toe Slope Lands, low hazard lands) geomorphic unit classification. This parcel is primarily on an east and southeast facing slope. The natural slopes associated with this part of the property are between 2 and 30 percent.

## **CONCLUSION**

Based on the soil description for this specific location, the soils are interpreted to be most analogous to a moist variant or phase of the Tahoma soil series. Based on the cited characteristics, the soil on this portion of the parcel would be assigned to Land Capability District Class 1b (SEZ), in accordance with the Land Capability Classification of the Lake Tahoe Basin (Bailey, 1974) and Chapter 37 of the TRPA Code of Ordinances.

### **Soil Profile Description # 4: (Dollar Creek Stream Environment Zone)**

**Soil Map Unit:** Tahoma - Jorge Complex (2 to 15 percent slopes)

**Soil Classification:** Loamy-skeletal, isotic, frigid Typic Endoaquand

**Verified Soil Series:** Tahoma (moist variant or phase)

**Drainage:** Moderately Well Drained

**Hydrologic Soil Group:** C

**Oi** 1 to 0; Alder leaf litter and organic detritus

**A1** 0 to 4 inches; brown (10YR 4/2) gravelly sandy loam; dark brown (10YR 3/3) moist; moderate fine granular structure; soft, loose, nonsticky, nonplastic; many fine and medium roots, few coarse roots; many very fine and fine interstitial pores; 20 percent gravel, 20 percent cobblestone; clear wavy boundary.

**A2** 4 to 12 inches ; brown (10YR 5/3), ) gravelly sandy loam; dark brown (10YR 3/3) moist; moderate fine granular structure; soft, loose, nonsticky and nonplastic; many fine and medium and few coarse roots; many very fine and fine interstitial pores; 20 percent gravel, 20 percent cobbles; clear wavy boundary.

**Bt1** 12 to 20 inches; pale brown (10YR 6/3) gravelly sandy clay loam; dark yellowish brown (10YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; common fine, medium and few coarse roots; many very fine and fine interstitial pores; common, fine and medium, moderate, red-brown (7.5 YR 5/6) masses of oxidized iron; 20 percent gravel, 20 percent cobblestone; gradual wavy boundary.

**Bt2** 20 to 40 inches; light brown (7.5 YR 6/4) gravelly sandy clay loam; dark brown (7.5 YR 4/4) moist; moderate medium subangular blocky structure; slightly hard, friable, nonsticky and nonplastic; few fine and common medium roots; common very fine and fine interstitial pores; common, fine and medium, moderate, red-brown (7.5 YR 5/6) masses of oxidized iron; 20 percent gravel, 20 percent cobbles.

**California Tahoe Conservancy Parcel**  
**Placer County APN 092-010-035**

## **ENVIRONMENTAL SETTING**

The parcel is shown as Land Capability District Classes 1b, 4 and 6 on the TRPA Land Capability and Stream Environment Zone Overlay Maps. The NRCS Soil Survey update (2007) for the Lake Tahoe Basin places this parcel within the Tahoma-Jorge complex (2 to 15 percent slopes), Tahoma very cobbly sandy loam (2 to 15 percent slopes), Jorge, very cobbly fine sandy loam, rubbly (15 to 30 percent slopes) and Jorge, very cobbly fine sandy loam, rubbly (5 to 15 percent slopes) soil map units. These four soil map units are consistent with the D-1 (Toe Slope Lands, low hazard lands) geomorphic unit classification. The genesis for this type of setting formed geologically in colluvium derived from andesitic agglomerate. This parcel is primarily on a southeast to east facing slope. The natural slopes associated with this part of the property are between 2 to 30 percent.

## **CONCLUSION**

Based on the soil description for this specific location, the soils are interpreted to be a moist variant or phase of the Jorge soils. Based on slope and the cited characteristics, the soil on this portion of the parcel would be assigned to Land Capability District Class 1b (SEZ), in accordance with the Land Capability Classification of the Lake Tahoe Basin (Bailey, 1974) and Chapter 37 of the TRPA Code of Ordinances.

### **Soil Profile Description #5: (Dollar Creek Stream Environment Zone)**

**Soil Map Unit:** Tahoma - Jorge Complex (2 to 15 percent slopes)

**Soil Classification:** Loamy-skeletal, isotic, frigid Typic Endoaquand

**Verified Soil Series:** Tahoma (moist variant or phase)

**Drainage:** Moderately Well Drained

**Hydrologic Soil Group:** C

**Oi** 1 to 0; Alder leaf litter and organic detritus

**A1** 0 to 4 inches; brown (10YR 5/2) gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, loose, nonsticky and nonplastic; common very fine and fine roots; many very fine and fine interstitial pores; 15 percent gravel; 20 percent cobble; clear smooth boundary.

**AB** 4 to 10 inches; pinkish light brown (7.5YR 7/4), gravelly sandy clay loam, dark brown (7.5YR 4/4) moist; weak fine and medium granular structure; soft, loose, slightly sticky and slightly plastic; few coarse roots; few medium and common very fine and fine roots, many very fine and fine interstitial pores; 15 percent gravel; 20 percent cobble; gradual smooth boundary.

**Bt1** 10 to 30 inches; brown (7.5 YR 5/4) gravelly sandy clay loam, dark yellowish brown (7.5 YR 4/3) moist; moderate medium subangular structure; soft, friable, slightly sticky and slightly plastic; common fine, medium and coarse roots; many very fine and fine interstitial and tubular pores; few thin clay skins on ped faces and pore linings; common, fine and medium, moderate, red-brown (7.5 YR 5/6) masses of oxidized iron; 15 percent gravel; 20 percent cobble gradual wavy boundary.

**Bt2** 30 to 40+ inches; reddish brown (7.5 YR 4/4) gravelly sandy clay loam, dark yellowish brown (7.5 YR 4/3) moist; moderate medium subangular structure; hard, friable, slightly sticky and slightly plastic; few very fine, fine and medium roots; many very fine and fine interstitial and tubular pores; common thin clay skins on ped faces and pore linings; common, fine and medium, moderate, red-brown (7.5 YR 5/6) masses of oxidized iron; 15 percent gravel; 20 percent cobble.

**California Tahoe Conservancy Parcel**  
**Placer County APN 092-010-035**

## **ENVIRONMENTAL SETTING**

The parcel is shown as Land Capability District Classes 1b, 4 and 6 on the TRPA Land Capability and Stream Environment Zone Overlay Maps. The NRCS Soil Survey update (2007) for the Lake Tahoe Basin places this parcel within the Tahoma-Jorge complex (2 to 15 percent slopes), Tahoma very cobbly sandy loam (2 to 15 percent slopes), Jorge, very cobbly fine sandy loam, rubbly (15 to 30 percent slopes) and Jorge, very cobbly fine sandy loam, rubbly (5 to 15 percent slopes) soil map units. These four soil map units are consistent with the D-1 (Toe Slope Lands, low hazard lands) geomorphic unit classification. The genesis for this type of setting formed geologically in colluvium derived from andesitic agglomerate. This parcel is primarily on a southeast to east facing slope. The natural slopes associated with this part of the property are between 2 to 30 percent.

## **CONCLUSION**

Based on the soil description for this specific location, the soils are interpreted to be most analogous to the Tahoma soil series. Based on slope and the cited characteristics, the soil on this parcel would be appropriately assigned to Land Capability District Class 6, in accordance with the Land Capability Classification of the Lake Tahoe Basin (Bailey, 1974) and Chapter 20 of the TRPA Code of Ordinances.

### **Soil Profile Description #6:**

**Soil Map Unit:** Tahoma very cobbly sandy loam, very stony (2 to 15 percent slopes)

**Soil Classification:** Loamy-skeletal, isotic, frigid Andic Haploxeralf

**Verified Soil Series:** Tahoma

**Drainage:** Moderately Well Drained

**Hydrologic Soil Group:** B

**Oi** 1 to 0 inches; conifer needles and organic duff.

**A1** 0 to 10 inches; yellowish brown (10YR 5/4) very stony sandy loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, loose, nonsticky and nonplastic; many very fine and fine roots, few coarse roots; many very fine and fine interstitial pores; 15 percent gravel, 20 percent cobbles; clear smooth boundary.

**BA** 10 to 24 inches; brown (7.5YR 5/4) gravelly sandy loam, dark brown (7.5 YR 4/4) moist; moderate, medium subangular structure; hard, friable, slightly sticky and plastic; common fine, medium and coarse roots; many very fine and fine tubular pores; 15 percent gravel, 20 percent cobbles; clear wavy boundary.

**Bt1** 24 to 36 inches; brown (7.5YR 5/4) gravelly sandy clay loam, dark brown (7.5 YR 4/4) moist; moderate, medium subangular structure; hard, friable, slightly sticky and plastic; common fine, medium and coarse roots; many very fine and fine tubular pores; 15 percent gravel, 20 percent cobbles; clear wavy boundary.

**Bt2** 36 to 42+ inches; yellowish brown (10 YR 5/6) coarse sandy clay loam, dark yellowish brown (10 YR 4/6) moist; moderate, medium subangular structure; hard, friable, slightly sticky and plastic; common fine, medium and coarse roots; many very fine and fine tubular pores; common clay films on ped faces and lining pores 15 percent gravel, 20 percent cobbles.

**California Tahoe Conservancy Parcel**  
**Placer County APN 092-010-035**

## **ENVIRONMENTAL SETTING**

The parcel is shown as Land Capability District Classes 1b, 4 and 6 on the TRPA Land Capability and Stream Environment Zone Overlay Maps. The NRCS Soil Survey update (2007) for the Lake Tahoe Basin places this parcel within the Tahoma-Jorge complex (2 to 15 percent slopes), Tahoma very cobbly sandy loam (2 to 15 percent slopes), Jorge, very cobbly fine sandy loam, rubbly (15 to 30 percent slopes) and Jorge, very cobbly fine sandy loam, rubbly (5 to 15 percent slopes) soil map units. These four soil map units are consistent with the D-1 (Toe slope lands) geomorphic unit classification. The soils of the Jorge and Tahoma series formed in colluvial and residual deposits derived from extrusive igneous (andesitic agglomerate) sources. This parcel is on an east to southeast facing slope. The natural slope for this portion of the parcel is 15 to 30 percent. The natural vegetation is White fir and Jeffrey Pine, with an understory of greenleaf manzanita and huckleberry oak.

## **CONCLUSION**

Based on the soil description for this specific location, the soil was interpreted to be most closely analogous to the Jorge soil series and the Jorge very cobbly, fine sandy loam, rubbly (15 to 30 percent slopes) soil map unit. This soil is associated with Land Capability District Class 4 in accordance with the Land Capability Classification of the Lake Tahoe Basin (Bailey, 1974) and Chapter 20 of the TRPA Code of Ordinances.

### **Soil Profile Description #7:**

**Soil Map Unit:** Jorge very cobbly fine sandy loam, rubbly (15 to 30 percent slopes)

**Soil Classification:** Loamy-skeletal, isotic, frigid Andic Haploxeralf

**Verified Soil Series:** Jorge

**Drainage:** Moderately Well Drained

**Hydrologic Soil Group:** B

**Oi** 2 to 0 inches; Jeffrey pine and White fir needles.

**A1** 0 to 9 inches; dark yellowish brown (10YR 3/4) gravelly sandy loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots, few medium coarse roots; many very fine and fine interstitial pores; 15 percent gravel, 20 percent cobbles; clear smooth boundary.

**AB** 9 to 17 inches; brown (10YR 4/4), gravelly loamy coarse sand, dark brown (10YR 4/3) moist; moderate, fine granular trending to weak, fine subangular blocky structure; slightly hard, very friable, nonsticky and slightly plastic;; many very fine and fine, few medium and coarse roots, many very fine and fine interstitial pores; 15 percent gravel, 20 percent cobbles; gradual wavy boundary.

**Bt1** 17 to 28 inches; yellowish brown (7.5 YR 4/4) gravelly sandy clay loam, dark brown (7.5 YR 3/4) moist; moderate, medium subangular blocky structure; hard, friable, slightly sticky and plastic; common fine and few medium and coarse roots; many very fine and fine interstitial pores; 20 percent gravel, 15 percent cobbles; clear wavy boundary.

**Bt2** 28 to 44 inches; strong brown (7.5 YR 5/6) coarse sandy clay loam, dark brown (7.5 YR 4/4) moist; moderate, medium subangular blocky; hard, friable, slightly sticky and plastic; few fine, medium and coarse roots; many very fine and fine interstitial pores; 20 percent gravel, 20 percent cobbles; clear wavy boundary.

**Cr** 44+ inches: fractured vesicular andesitic agglomerate.



**California Tahoe Conservancy Parcel**  
**Placer County APN 092-010-035**

**ENVIRONMENTAL SETTING**

The parcel is shown as Land Capability District Classes 1b, 4 and 6 on the TRPA Land Capability and Stream Environment Zone Overlay Maps. The NRCS Soil Survey update (2007) for the Lake Tahoe Basin places this parcel within the Tahoma-Jorge complex (2 to 15 percent slopes), Tahoma very cobbly sandy loam (2 to 15 percent slopes), Jorge, very cobbly fine sandy loam, rubbly (15 to 30 percent slopes) and Jorge, very cobbly fine sandy loam, rubbly (5 to 15 percent slopes) soil map units. These four soil map units are consistent with the D-1 (Toe slope lands) geomorphic unit classification. The soils of the Jorge and Tahoma series formed in colluvial and residual deposits derived from extrusive igneous (andesitic agglomerate) sources. This parcel is on an east and southeast facing slope. The natural slope for this portion of the parcel is 15 to 30 percent. The natural vegetation is White fir and Jeffrey Pine, with an understory of greenleaf manzanita and squaw carpet and huckleberry oak.

**CONCLUSION**

Based on the soil description for this specific location, the soil was determined to most analogous to the Tahoma soil series and the Tahoma very cobbly sandy loam, very stony (2 to 15 percent slopes) map unit which is associated with Land Capability District Class 6 in accordance with the Land Capability Classification of the Lake Tahoe Basin (Bailey, 1974) and Chapter 20 of the TRPA Code of Ordinances.

**Soil Profile Description #8:**

**Soil Map Unit:** Tahoma very cobbly sandy loam, very stony (2 to 15 percent slopes)

**Soil Classification:** Fine-loamy mixed isotic, frigid Andic Haploxeralf

**Verified Soil Series:** Tahoma

**Drainage:** Moderately Well Drained

**Hydrologic Soil Group:** B

**Oi** 2 to 0 inches; Jeffrey pine and White fir needles.

**A1** 0 to 6 inches; dark yellowish brown (10YR 3/4) gravelly sandy loam, dark brown (10YR 3/3) moist; moderate fine granular structure; soft, very friable, nonsticky and nonplastic; many very fine and fine roots, few medium coarse roots; many very fine and fine interstitial pores; 15 percent gravel; 20 percent cobbles; clear smooth boundary.

**AB** 6 to 11 inches; brown (10YR 4/4), gravelly sandy loam, dark brown (10YR 4/3) moist; moderate, fine granular trending to weak, fine subangular blocky structure; slightly hard, very friable, nonsticky and slightly plastic; many very fine and fine, few medium and coarse roots, many very fine and fine interstitial pores; 15 percent gravel; 20 percent cobbles; gradual wavy boundary.

**Bt1** 11 to 18 inches; yellowish brown (7.5 YR 4/4) gravelly sandy clay loam, dark brown (7.5 YR 3/4) moist; moderate, medium subangular blocky structure; hard, friable, slightly sticky and plastic; common fine and few medium and coarse roots; many very fine and fine interstitial pores; 15 percent gravel; 20 percent cobbles; clear wavy boundary.

**Bt2** 18 to 28 inches; strong brown (5R 5/6) gravelly clay loam, dark brown (7.5 YR 4/4) moist; moderate, medium subangular blocky; hard, friable, slightly sticky and plastic; few fine, medium and coarse roots; many very fine and fine interstitial pores; 15 percent gravel; 20 percent cobbles; clear wavy boundary.

**Bt3** 28 to 40+ inches; strong brown (5YR 5/6) gravelly sandy clay loam, dark brown (7.5 YR 4/4) moist; moderate, medium subangular blocky; hard, friable, slightly sticky and plastic; few fine, medium and coarse roots; many very fine and fine interstitial pores; 15 percent gravel; 20 percent cobbles.



**California Tahoe Conservancy Parcel**  
**Placer County APN 092-010-035**

## **ENVIRONMENTAL SETTING**

The parcel is shown as Land Capability District Classes 1b, 4 and 6 on the TRPA Land Capability and Stream Environment Zone Overlay Maps. The NRCS Soil Survey update (2007) for the Lake Tahoe Basin places this parcel within the Tahoma-Jorge complex (2 to 15 percent slopes), Tahoma very cobbly sandy loam (2 to 15 percent slopes), Jorge, very cobbly fine sandy loam, rubbly (15 to 30 percent slopes) and Jorge, very cobbly fine sandy loam, rubbly (5 to 15 percent slopes) soil map units. These four soil map units are consistent with the D-1 (Toe slope lands) geomorphic unit classification. The soils of the Jorge and Tahoma series formed in colluvial and residual deposits derived from extrusive igneous (andesitic agglomerate) sources. This parcel is on an east and southeast facing slope. The natural slope for this portion of the parcel is 15 to 30 percent. The natural vegetation is White fir and Jeffrey Pine, with an understory of greenleaf Manzanita, squaw carpet and huckleberry oak.

## **CONCLUSION**

Based on the soil description for this specific location, the soil was determined to be a moist variant or phase of the Tahoma soil series which is associated with Land Capability Class 1b in accordance with the Land Capability Classification of the Lake Tahoe Basin (Bailey, 1974) and Chapter 20 of the TRPA Code of Ordinances.

## **Soil Profile Description #9: (SEZ)**

**Soil Map Unit:** Tahoma -very cobbly sandy loam, very stony (2 to 15 percent slopes)

**Soil Classification:** Loamy-skeletal, isotic, frigid Typic Endoaquand

**Verified Soil Series:** Tahoma (moist variant or phase)

**Drainage:** Moderately Well Drained

**Hydrologic Soil Group:** C

**Oi** 1 to 0 inches; conifer litter and organic detritus.

**A1** 0 to 4 inches; very dark gray (10YR 3/1) gravelly sandy loam, very dark grayish brown (10YR 3/2) moist; weak fine granular structure; soft, loose, nonsticky and nonplastic; common very fine and fine roots; many very fine and fine interstitial pores; 15 percent gravel; 20 percent cobble; clear smooth boundary.

**AB** 4 to 10 inches; very dark gray (7.5YR 3/1), gravelly sandy clay loam, dark brown (7.5YR 4/4) moist; weak fine and medium granular structure; soft, loose, slightly sticky and slightly plastic; few coarse roots; few medium and common very fine and fine roots, many very fine and fine interstitial pores; common, fine and medium, moderate, red-brown (7.5 YR 5/6) masses of oxidized iron; 15 percent gravel; 20 percent cobble; gradual smooth boundary.

**Bt1** 10 to 30 inches; brown (7.5 YR 4/4) gravelly sandy clay loam, dark yellowish brown (7.5 YR 4/3) moist; moderate medium subangular structure; soft, friable, slightly sticky and slightly plastic; common fine, medium and coarse roots; many very fine and fine interstitial and tubular pores; few thin clay skins on ped faces and pore linings; common, fine and medium, moderate, red-brown (7.5 YR 5/6) masses of oxidized iron; 15 percent gravel; 20 percent cobble; gradual wavy boundary.

**Bt2** 30 to 40+ inches; reddish brown (7.5 YR 4/4) gravelly sandy clay loam, dark yellowish brown (7.5 YR 4/3) moist; moderate medium subangular structure; hard, friable, slightly sticky and slightly plastic; few very fine, fine and medium roots; many very fine and fine interstitial and tubular pores; common thin clay skins on ped faces and pore linings; common, fine and medium, moderate, red-brown (7.5 YR 5/6) masses of oxidized iron; 15 percent gravel, 20 percent cobble.

## Appendix B

# Potential Coverage and Existing Coverage Calculations and Tables

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## Appendix B: Base Allowable Land Coverage and Existing Land Coverage Calculations and Tables

**Table 1: California Tahoe Conservancy Property - Placer County Parcels 092-010-035-000 and NTPUD Right-of-Way 092-010-041-000**

(Portion of APN 092-010-035-000 in the Project Area: 111.77 ac. / 4,868,894 sq. ft.)

(Portion of NTPUD Right-of-Way parcel 092-010-041-000 embedded in APN 092-010-035-000: 0.23 ac. / 10,318 sq. ft.)

Soil Map Unit and Land Capability District Class	Soil Map Unit and Land Capability District (Square Feet)	Verified Base Allowable Coverage (Square Feet)	Verified Existing Soft Coverage (Square Feet)
Jorge very cobbly fine sandy loam, rubbly (15 to 30 percent slopes) Land Capability District Class 4	361,476	72,295	0
Jorge very cobbly fine sandy loam, rubbly (5 to 15 percent slopes) Land Capability District Class 6	1,251,385	375,416	6,816
Tahoma very cobbly sandy loam, very stony (2 to 15 percent slopes) Land Capability District Class 6	1,354,612	406,383	9,249
Tahoma-Jorge Complex (2 to 15 percent slopes) Land Capability District Class 6	1,818,442	545,533	5,982
Stream Environment Zone Land Capability District Class 1b	82,979	830	375
<b>Total for Portion of Parcel Included in the Project Area</b>	<b>4,868,894 (111.91 ac.)</b>	<b>1,400,457</b>	<b>22,422</b>

**IMPORTANT NOTE:** A small portion of the NTPUD right-of-way parcel 092-010-041 extends into CTC parcel 092-010-035 at its southeastern boundary. The small area associated with this portion of the NTPUD right-of-way has been included in the area calculations for CTC parcel 092-010-35. The portion of NTPUD right-of-way parcel 092-010-041 which extends into CTC parcel 092-010-035 is 10,318 sq. ft. (0.23 ac.) in total area. The 10,318 sq. ft. (0.23 ac.) associated with the NTPUD right-of-way parcel is represented in the Tahoma-Jorge Complex (2 to 15 percent slopes) soil map unit calculations cited above.

**Table 2: California Tahoe Conservancy Property - Placer County Parcel 092-010-021-000**

(APN 092-010-021-000: 20.53 ac. / 894,335 sq. ft.)

Soil Map Unit and Land Capability District Class	Soil Map Unit and Land Capability District (Square Feet)	Verified Base Allowable Coverage (Square Feet)	Verified Existing Soft Coverage (Square Feet)
Tahoma-Jorge Complex (2 to 15 percent slopes) Land Capability District Class 6	894,335	268,301	2,682
<b>Total</b>	<b>894, 335 (20.53 ac.)</b>	<b>268,301</b>	<b>2,682</b>

# Dollar Creek Shared-Use Trail Project – Land Capability and Land Coverage Report

Prepared for Hauge Brueck and Associates and the Placer County Public Works Department

Table 3: California Tahoe Conservancy Property - Placer County Parcels 092-240-021-000 and 092-010-039-000

(APN 092-240-021-000: 21.01 ac. / 915,426 sq. ft.) (APN 092-010-039-000: 0.27 ac. / 11,837 sq. ft.)

Soil Map Unit and Land Capability District Class	Soil Map Unit and Land Capability District (Square Feet)	Verified Base Allowable Coverage (Square Feet)	Verified Existing Soft Coverage (Square Feet)
Jorge very cobbly fine sandy loam, rubbly (15 to 30 percent slopes) Land Capability District Class 4	828,802	165,760	0
Tahoma-Jorge Complex (2 to 15 percent slopes) Land Capability District Class 6	98,461	29,538	0
<b>Total</b>	<b>927,263 (21.28 ac.)</b>	<b>195,298</b>	<b>0</b>

**IMPORTANT NOTE:** The small CTC temporary access right-of-way parcel 092-010-039 is immediately adjacent to CTC parcel 092-240-021. The area associated with the CTC right-of-way has been included in the area calculations for CTC parcel 092-240-021. The CTC right-of-way parcel 092-010-039 included with the CTC parcel 092-240-021 is 11,837 sq. ft. (0.27 ac.) in total area. All 11,837 sq. ft. (0.27 ac.) of the right-of-way is in the Tahoma-Jorge Complex (2 to 15 percent slopes) soil map unit and is included in the calculations cited above.

Table 4: NV Energy Property - Placer County Parcel 092-010-023-000

(APN 092-010-023-000: 18.27 ac. / 795,856 sq. ft.)

Soil Map Unit and Land Capability District Class	Soil Map Unit and Land Capability District (Square Feet)	Verified Base Allowable Coverage (Square Feet)	Verified Existing Soft Coverage (Square Feet)
Jorge very cobbly fine sandy loam, rubbly (15 to 30 percent slopes) Land Capability District Class 4	55,767	11,153	0
Tahoma very cobbly sandy loam, very stony (2 to 15 percent slopes) Land Capability District Class 6	731,627	219,488	9,207
Stream Environment Zone Land Capability District Class 1b	8,462	85	0
<b>Total</b>	<b>795,856 sq. ft. (18.27 ac.)</b>	<b>230,726</b>	<b>9,207</b>

# Dollar Creek Shared-Use Trail Project – Land Capability and Land Coverage Report

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Table 5: California Tahoe Conservancy Property - Placer County Parcel 092-010-034-000

(APN 092-010-034-000: 0.56 ac. / 24,416 sq. ft.)

Soil Map Unit and Land Capability District Class	Soil Map Unit and Land Capability District (Square Feet)	Verified Base Allowable Coverage (Square Feet)	Verified Existing Soft Coverage (Square Feet)
Tahoma very cobbly sandy loam, very stony (2 to 15 percent slopes) Land Capability District Class 6	24,416	7,325	0
<b>Total</b>	<b>24,416 (0.56 ac.)</b>	<b>7,325</b>	<b>0</b>

Table 6: California Tahoe Conservancy Property - Placer County Parcel 092-010-033-000

(APN 092-010-033-000: 0.56 ac. / 24,707 sq. ft.)

Soil Map Unit and Land Capability District Class	Soil Map Unit and Land Capability District (Square Feet)	Verified Base Allowable Coverage (Square Feet)	Verified Existing Soft Coverage (Square Feet)
Tahoma-Jorge Complex (2 to 15 percent slopes) Land Capability District Class 6	24,707	7,412	0
<b>Total</b>	<b>24,707 (0.56 ac.)</b>	<b>7,412</b>	<b>0</b>

Table 7: North Tahoe Public Utility District Property - Placer County Parcels 092-010-042-000 and 092-010-041-000

(APN 093-010-042-000 28.03 ac. / 1,234,224 sq. ft.) (Portion of APN 092-010-041-000: 0.45 ac. / 19,717 sq. ft.)

Soil Map Unit and Land Capability District Class	Soil Map Unit and Land Capability District (Square Feet)	Verified Base Allowable Coverage (Square Feet)	Verified Existing Soft Coverage (Square Feet)
Tahoma-Jorge Complex (2 to 15 percent slopes) Land Capability District Class 6	1,254,966	376,490	3,174
<b>Total</b>	<b>1,254,966 (28.81 ac.)</b>	<b>376,490</b>	<b>3,174</b>

**IMPORTANT NOTE:** A portion of the NTPUD right-of-way parcel 092-010-041 extends into NTPUD parcel 092-010-042. The area associated with this portion of the NTPUD right-of-way has been included in the area calculations for NTPUD parcel 092-010-042. The portion of NTPUD right-of-way parcel 092-010-041 which extends into NTPUD parcel 092-010-042 is 19,717 sq. ft. (0.45 ac.) in total area. All 19,717 sq. ft. (0.45 ac.) of the right-of-way is in the Tahoma-Jorge Complex (2 to 15 percent slopes) soil map unit and has been included in the calculations cited above.

# Dollar Creek Shared-Use Trail Project – Land Capability and Land Coverage Report

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**Table 8: North Tahoe Public Utility District Property - Placer County Parcels 093-010-039-000 and 092-010-041-000**

(APN 093-010-039-000 44.08 ac. / 1,920,333 sq. ft.) (Portion of APN 092-010-041-000: 2.39 ac. / 104,111 sq. ft.)

Soil Map Unit and Land Capability District Class	Soil Map Unit and Land Capability District (Square Feet)	Verified Base Allowable Coverage (Square Feet)	Verified Existing Soft Coverage (Square Feet)
Tahoma very cobbly sandy loam, very stony (2 to 15 percent slopes) Land Capability District Class 6	1,067,585	320,276	6,824
Tahoma-Jorge Complex (2 to 15 percent slopes) Land Capability District Class 6	956,861	287,058	6,250
<b>Total</b>	<b>2,024,446 (46.47 ac.)</b>	<b>607,334</b>	<b>13,074</b>

**IMPORTANT NOTE:** A portion of the NTPUD right-of-way parcel 092-010-041 extends into NTPUD parcel 092-010-039. The area associated with this portion of the NTPUD right-of-way has been included in the area calculations for NTPUD parcel 092-010-039. The portion of NTPUD right-of-way parcel 092-010-041 which extends into NTPUD parcel 092-010-039 is 104,111 sq. ft. (2.39 ac.) in total area. The area associated with this portion of the NTPUD right-of-way parcel is distributed between two different soil map units; as cited in the Table above. Hence, 50,501 sq. ft. of the right-of-way is in the Tahoma very cobbly sandy loam, very stony (2 to 15 percent slopes) soil map unit and 53,610 sq. ft. is in the Tahoma-Jorge Complex (2 to 15 percent slopes) soil map unit.

**Table 9: North Tahoe Public Utility District Property - Placer County Parcel 093-010-038-000**

APN 093-010-038-000: 4.96 ac. / 216,261 sq. ft.)

Soil Map Unit and Land Capability District Class	Soil Map Unit and Land Capability District (Square Feet)	Verified Base Allowable Coverage (Square Feet)	Verified Existing Soft Coverage (Square Feet)
Tahoma very cobbly sandy loam, very stony (2 to 15 percent slopes) Land Capability District Class 6	216,261	64,878	405
<b>Total</b>	<b>216,261 (4.96 ac.)</b>	<b>64,878</b>	<b>405</b>

**Table 10: North Tahoe Public Utility District Property - Placer County Parcels 093-010-037-000 and 092-010-040-000**

(APN 093-010-037-000: 5.07 ac. / 221,034 sq. ft.) (Portion of APN 092-010-040-000: 0.35 ac. / 15,427 sq. ft.)

Soil Map Unit and Land Capability District Class	Soil Map Unit and Land Capability District (Square Feet)	Verified Base Allowable Coverage (Square Feet)	Verified Existing Soft Coverage (Square Feet)
Tahoma very cobbly sandy loam, very stony (2 to 15 percent slopes) Land Capability District Class 6	236,459	70,938	3,408
<b>Total</b>	<b>236,459 (5.42 ac.)</b>	<b>70,938</b>	<b>3,408</b>

**IMPORTANT NOTE:** A small portion of the NTPUD right-of-way parcel 092-010-040 extends into NTPUD parcel 092-010-037. The area associated with this portion of the NTPUD right-of-way has been included in the area calculations for NTPUD parcel 092-010-037. 15,427 sq. ft. (0.35 ac.) of the NTPUD right-of-way parcel extends into the designated Project Area. The entire area associated with this portion of the NTPUD right-of-way parcel is assigned to the Tahoma very cobbly sandy loam, very stony (2 to 15 percent slopes) soil map unit.



## Appendix C

# Dollar Creek Shared Use Trail Project Historic Aerial Image Analysis (1969)

**HISTORIC AERIAL IMAGE ANALYSIS FOR THE DOLLAR HILL SHARED-USE TRAIL PROJECT**

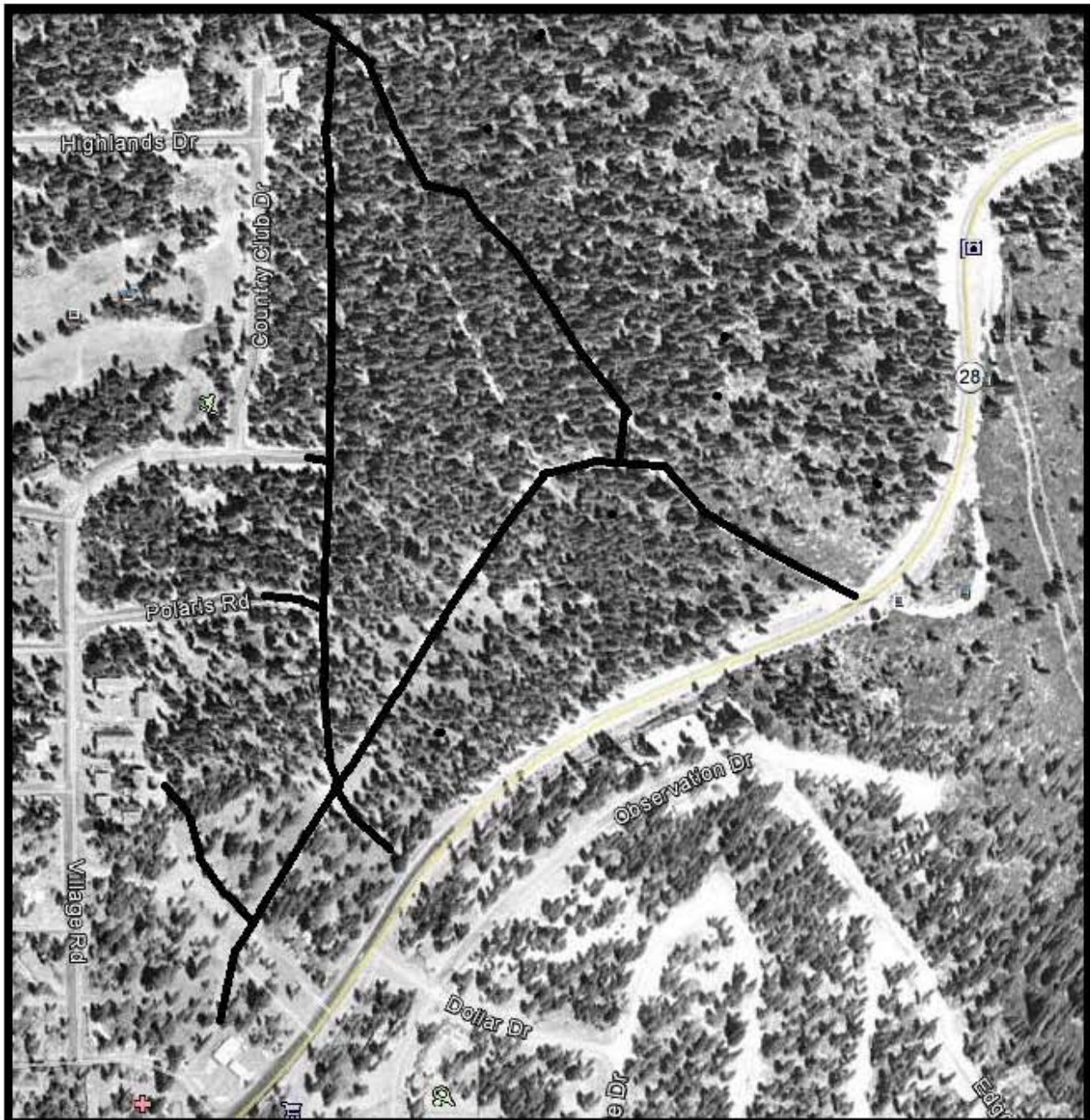


Figure 5: The 1969 aerial photograph of the Dollar Creek Shared-Use Trail Project Area as depicted in Project Area Map 1 (Figure 2) with a tracing of the trails (soft coverage) that existed at that time in the southern third of the Project Area.



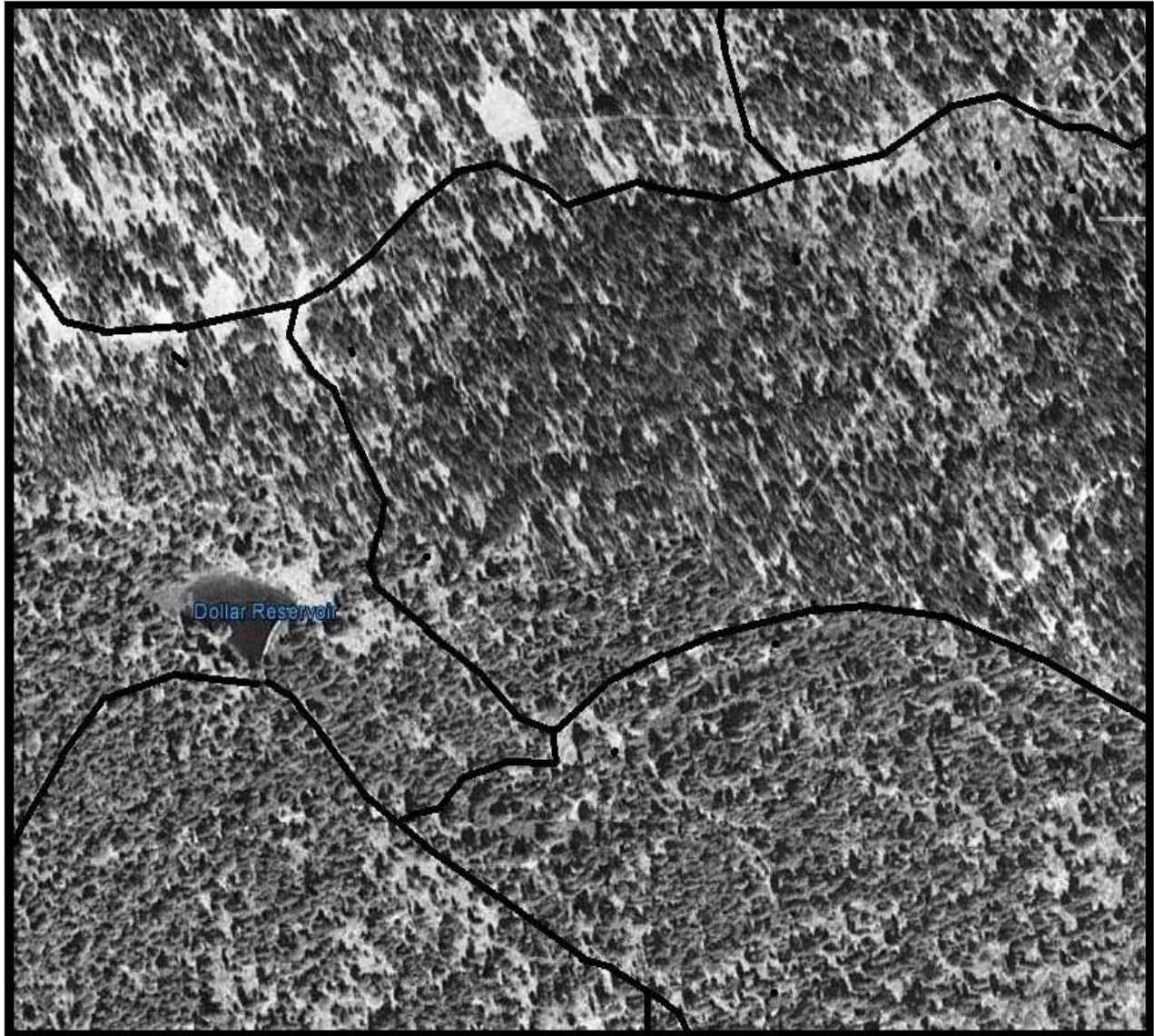


Figure 6: The 1969 aerial photograph of the Dollar Creek Shared-Use Trail Project Area as depicted in Project Area Map 2 (Figure 3) with a tracing of the trails (soft coverage) that existed at that time in the middle third of the Project Area.



## Dollar Creek Shared-Use Trail Project – Land Capability and Land Coverage Report

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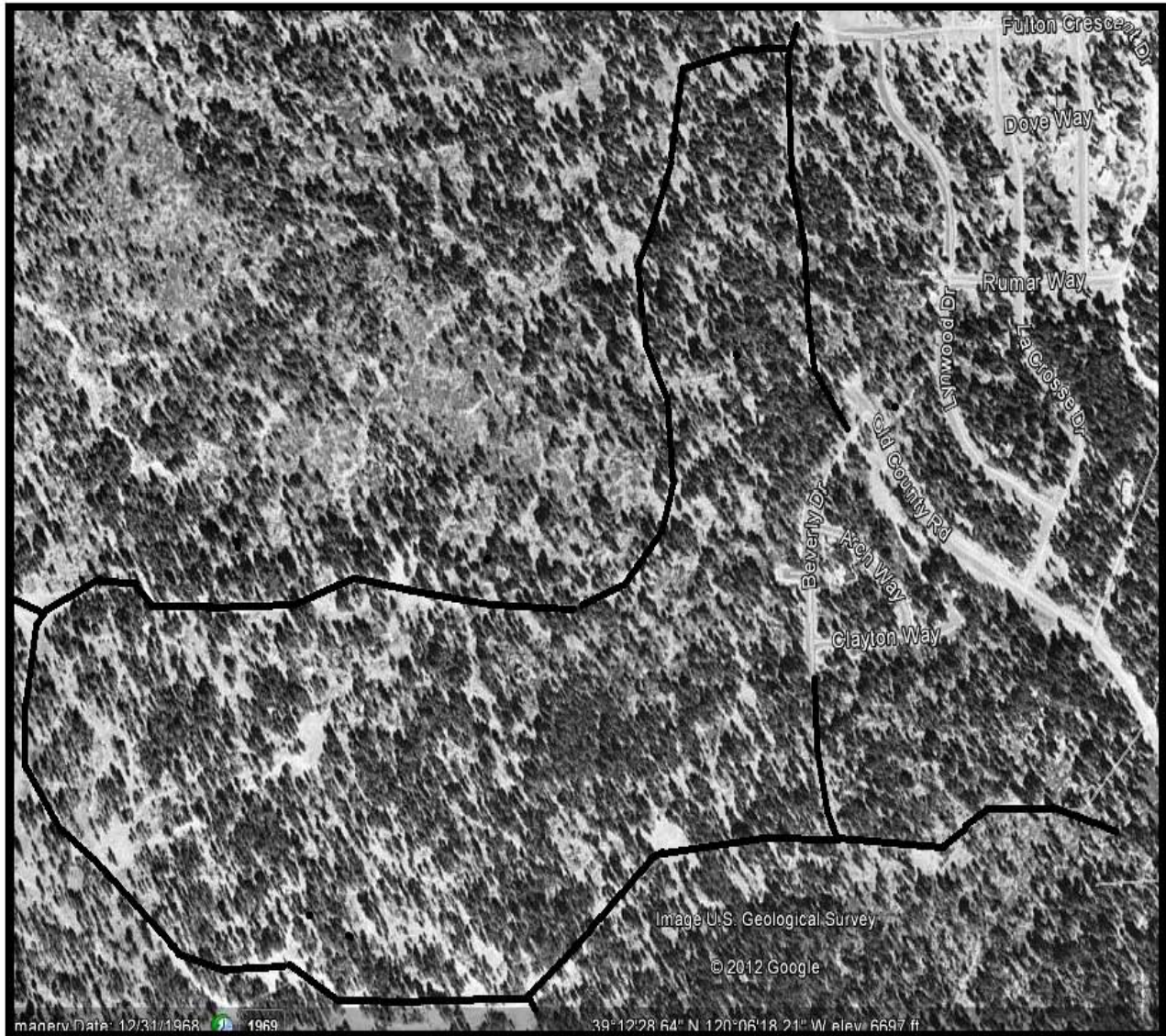


Figure 7: The 1969 aerial photograph of the Dollar Creek Shared-Use Trail Project Area as depicted in Project Area Map 3 (Figure 4) with a tracing of the trails (soft coverage) that existed at that time in the northern third of the Project Area.



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